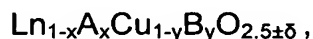


IN THE CLAIMS

Please amend the claims as indicated in the following listing of claims, which replaces all prior listings of claims.

1. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel cells(SOFCs) cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity ~~as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as~~ and having a formula:



wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt(~~Co~~), iron(~~Fe~~), nickel(~~Ni~~), zinc(~~Zn~~), manganese(~~Mn~~), aluminum(~~Al~~), vanadium(~~V~~), iridium(~~Ir~~), molybdenum(~~Mo~~), palladium(~~Pd~~), platinum(~~Pt~~), magnesium(~~Mg~~), ruthenium(~~Ru~~), rhodium(~~Rh~~), chromium(~~Cr~~) and zirconium(~~Zr~~), X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side~~ by an alkaline-earth metals, metal, and has~~converting partly~~ copper(~~Cu~~) partly converted to a trivalence copper ion, ~~forming to form~~ perovskite having oxygen vacancies with a regular ~~regularity~~ sequence, ~~utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted through external~~

~~circuit with converting oxygen to forming oxygen ion, obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.~~

2. (Currently Amended) The materials cathode according to claim 1, wherein ~~said materials comprise~~ the cathode comprises at least 1% copper(Cu).

3. (Canceled)

4. (Canceled)

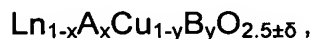
5. (Canceled)

6. (Currently Amended) The materials cathode according to claim 1, wherein ~~said $\text{Ln}_{1-x}\text{A}_x\text{Cu}_y\text{B}_y\text{O}_{2.5\pm\delta}$ is for said cathode in solid oxide fuel cells(SOFCs) operating~~ the cathode operates at a temperature in a range of [400-800] 400 – 800 degrees Celsius.

7. (Canceled)

8. (Currently Amended) ~~Materials for~~ A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel cells(SOFCs) cell (SOFC), comprising:

an oxide having oxygen vacancies and high conductivity as ~~cathode~~,
~~wherein cathode accelerating absorption of oxygen molecule and diffusion of~~
~~oxygen ion; said materials having general form as~~ and having a formula:

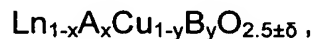


wherein Ln is a lanthanide selected from the group consisting of lanthanum(~~La~~), cerium(~~Ce~~), praseodymium(~~Pr~~), neodymium(~~Nd~~), promethium(~~Pm~~), samarium(~~Sm~~), europium(~~Eu~~), gadolinium(~~Gd~~), terbium(~~Tb~~), dysprosium(~~Dy~~), holmium(~~Ho~~), erbium(~~Er~~), thulium(~~Tm~~), ytterbium(~~Yb~~) and lutetium(~~Lu~~), A is an alkaline-earth metal selected from the group consisting of beryllium(~~Be~~), magnesium(~~Mg~~), calcium(~~Ca~~), strontium(~~Sr~~), barium(~~Ba~~) and radium(~~Ra~~), B is a metal selected from the group consisting of cobalt(~~Co~~), iron(~~Fe~~), nickel(~~Ni~~), zinc(~~Zn~~), manganese(~~Mn~~), aluminum(~~Al~~), vanadium(~~V~~), iridium(~~Ir~~), molybdenum(~~Mo~~), palladium(~~Pd~~), platinum(~~Pt~~), magnesium(~~Mg~~), ruthenium(~~Ru~~), rhodium(~~Rh~~), chromium(~~Cr~~) and zirconium(~~Zr~~), X is greater than or equal to 0 and less than or equal to 1, Y is greater than ~~or equal to~~ 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

the cathode is doped on an anode side ~~doping of A-side by an alkaline-~~
~~earth metals, converting metal, and has partly copper(Cu) partly converted to a~~
~~trivalence copper ion; to form~~ forming perovskite having oxygen vacancies with
~~regularity a regular~~ sequence, ~~utilizing catalytic accelerating cathode reaction of~~
~~cathode electrode, compounding electron being conducted though external~~
~~circuit with converting oxygen to forming oxygen ion, obtaining anode and~~
~~hydrogen reaction by diffusing oxygen ion to electrolyte.~~

9. (Currently Amended) ~~Materials for A cathode that accelerates absorption of oxygen molecules and diffusion of oxygen ions in a solid oxide fuel cells(SOFCs) cell (SOFC) having the general form a formula~~ $ABO_{2.5\pm\delta}$, comprising:

~~an oxide having oxygen vacancies and high conductivity as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as and having a formula:~~



wherein Ln is a lanthanide ion, A is an alkaline-earth metal, B is a metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc(Zn), manganese(Mn), aluminum(Al), vanadium(V), iridium(Ir), molybdenum(Mo), palladium(Pd), platinum(Pt), magnesium(Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium(Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than or equal to 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and

~~the cathode is doped on an anode side doping of A-side by an alkaline-earth metals, metal; and has converting partly copper(Cu) partly converted to a trivalence copper ion, forming to form perovskite having oxygen vacancies with a regular regularity sequence, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with converting oxygen to forming oxygen ion, obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.~~